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# Fax Cover Sheet

**Date:** 25 Mar 2005

<b>To:</b> Mr. Jennings	<b>From:</b> Ana M. Fortuna
<b>Application/Control Number:</b> 10/090,802	<b>Art Unit:</b> 1723
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**Comments:**

see attached copied of the newly pending office action to be mailed. the copy is re-fixed to you, since you did not received the first copy.

**Number of pages** \_\_ **including this page****STATEMENT OF CONFIDENTIALITY**

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### DETAILED ACTION

1. This Office Action is supplemental to paper of 10/06/04, this correct the number of allowed and/or objected claims as detailed in the attached action, as requested by Mr. Tipton Jennings on a telephone interview on 1/2005, and 3/2005.
2. Regarding claims 17, 41, 42 the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).
3. Claim 41, 44 provides for the use of a water purification system, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claims 41, 44 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

5. Claim, 17, 31, 32, 35-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 17 is incomplete, the term "is of any" should be "is made of any", and the term

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"Perpex, glass" should be "Perpex, or glass". In claim 31, is unclear as to the operating pressure ranges of the monitoring unit, the term "more particularly" narrows the claim to the specified range of operating pressures. In claim 35, the term "under conventional system operations", is unclear as to what conditions are intended. Claim 36 is also unclear as depending on claim 35. In claim 32, the term "conventional", referring to a reverse osmosis membrane system" is indefinite regarding to the system structure.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 4-6, 7, 10-13, 14, 15, 30, 31, 43, 45, 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bond et al (6,161,435) (hereinafter Bond). Bond teaches a unit or system for monitoring fouling of a membrane, the unit contains the membrane (19), and inlet and outlets for the feed permeate and retentate respectively (14, 24, 23), the membrane is provided on a support (21). (Fig. 1, column 4, line 39, through column 5, lines 1-28). Bond disclosed controlling the fouling of the membrane by means of an ultrasonic measurement system that employs high frequency "sound waves" (column 10, lines 52-64).

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The system of Bond is not adapted with the inspection window including the housing and other features as claimed in claims 1-2, 30, however, teaches the inspection window (optical probe) as conventional and provided in the membrane chamber or housing that holds the membrane, and provides information about fouling only on the outer portion of the membrane, leaving the interior portion of the membrane without being inspected (column 1, last paragraph). It would have been obvious to one skilled in the art at the time the invention was made to provide a membrane housing with the inspection window as disclosed in Bond, if only detecting the fouling of the outer surface of the membrane is intended. It would have been further obvious to one skilled in the art at the time the invention was made to provide the membrane system with both fouling detecting means, e.g. the window and sound waves, as disclosed in Bond, e.g. to obtain a better information about the actual degree of fouling of the membrane. Regarding claims 6, 7, 10-12; Bond discloses the membrane as spiral wound or hollow fiber membrane, which are operated in cross flow mode (figures 1 and 3, column 6, lines 39). The support of 6, 7, 10-12, are also shown by the discussed figures, and further by figure 16, elements 127, 128.

As to claim 31, reverse osmosis membranes, e.g. TFC are conventionally operated within the claimed pressure range, e.g. 720 psi. It would have been obvious to one skilled in the art at the time the invention was made to monitor the module at conventional or normal operating pressures during the process.

Claim 43 is discussed above with regard to claim 1.

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6. Claims 18-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bond et al. (6,161,435)(hereinafter Bond) as applied to claims 1, 2, 6, 7 above, and further in view of Zeiher et al (6,017,459)(hereinafter Zeiher). Regulating pressure and flow in the device or unit of Bond is disclosed, however, providing the unit with the controlling valves and pump is not shown in the figure drawings. Reference to Zeiher ('459), discloses a membrane or reverse osmosis unit provided within a housing and provided with valves and pressure control means (Fig 4, element 30 and conduits 42, 43, 44, connected to a pump and pressure gauges in each conduit, as claimed in claims 18-20. as to claims 32033, using a membrane provided with inspection window for detecting fouling in connection with a membrane disposed within a housing is disclosed by Zeiher, the membrane with the window of probe is positioned between the feed tank and the operating membrane (element 10, Fig. 4).(column 1, first paragraph, and lines 37-47). The description of the apparatus 10, including window 21 for detecting film formation on the membrane is disclosed in the reference (column 5, lines 10-39). It would have been therefore, obvious at the time the invention was made to use sample membrane devices including membranes for detecting the level of fouling or contaminants on a membrane surface, and further connect the membrane to other membranes in operation to predict the level of contamination that can be expected during the process and properly control the parameters maintaining the membrane good operation conditions, e.g. cleaning, pressure and flow rate, as suggested by Zeiher.

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7. Claims 24-26, 9, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bond et al. (6,61,435)(hereinafter Bond) as applied to claims 1, 2 above, and further in view of Pearl et al (5,599,447) (hereinafter Pearl). Reference to Bond fails to disclose providing the membrane with a manifold. Pearl teaches inlets to a membrane having support and provided between plates, the manifolds and provided in the inlet and exit conduits (column 3, lines 22-39), the manifolds are designed to provide a better control of pressure drop with the membrane (tangential or cross-flow) system (column 1, lines 1-35). and last paragraph bridging column 2, lines 1-5). In a system as shown in Fig. 1 of reference to Bond, it would have been obvious to one skilled in the art at the time the invention was made to provide the inlet and outlet conduits with manifolds allowing better fluid distribution in the unit, as suggested by Pearl. Pearl further discloses conventional open pore size feed or permeate membrane support or drainage material.

***Allowable Subject Matter***

8. Claims 34, 37, 38, 39, 40 are allowed over the prior art of record.
9. Claims 16 is are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
10. Claims 17, 31, 32, 33, 35, 36, 41, 42, 44, would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this

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Office action and to include all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter: the position of the window, and the combination of the filter monitoring structure with a second membrane separation system, and connected to monitor the membrane system, e.g. for monitoring membrane conditions in a separate unit, in not disclosed or suggested in the prior art of record.

### **Conclusion**

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Additional references cited represent the state of the art in membrane visual inspection. References 4,218,313, 4,818,385, and 3,703,959 teach inspection windows, transparent for visualizing membrane or filters behavior, and measuring filtering parameters during the process..

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ana M Fortuna whose telephone number is (571) 272-1141. The examiner can normally be reached on 9:30-6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on (571) 272-1151. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

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Ana M Fortuna  
Primary Examiner  
Art Unit 1723

AMF  
March 24, 2005